We Claim:

1. A video compressor comprising:

a first encoder for receiving a first video stream and for encoding the first video stream; and

a second encoder for receiving a second video stream and for encoding the second video stream,

wherein the first encoder provides information related to the first video stream to the second encoder to be used during the encoding of the second video stream.

2. The video compressor of claim 1 further comprising a multiplexer for receiving and multiplexing the encoded first video stream and the encoded second video stream to generate a compressed 3D video stream.

3. The video compressor of claim 1 wherein the first video stream includes one selected from a group consisting of a right view video stream and a left view video stream, and the second video stream includes either the right view or the left view video stream, whichever is not included in the first video stream.

4. The video compressor of claim 3 wherein the left and right view video streams have been generated by a single camera using a 3D lens system for interleaving right and left view images to generate a single stream of optical images.

5. The video compressor of claim 3 wherein the right view video stream has been generated using a right view video camera and the left view video stream has been generated using a left view video camera.

6. The video compressor of claim 1 wherein the first encoder includes an MPEG encoder, the first video stream is encoded to an MPEG video stream, and the second encoder receives one or more decoded pictures, and

wherein the second encoder uses the decoded pictures from the first video stream for disparity estimation and one or more decoded pictures from the second video stream for motion estimation, during bi-directional coding of the second video stream.

7. A method of compressing video, the method comprising the steps of:

receiving a first video stream;

receiving a second video stream;

encoding the first video stream; and

encoding the second video stream using information related to the first video stream.

8. The method of claim 7 further comprising the step of multiplexing the encoded first video stream and the encoded second video stream to generate a compressed 3D video stream.

9. The method of claim 7 wherein the first video stream includes one selected from a group consisting of a right view video stream and a left view video stream, and the second video stream includes either the right view or the left view video stream, whichever is not included in the first video stream.

10. The method of claim 7 wherein the step of encoding the first video stream comprises the step of MPEG encoding the first video stream to generate an MPEG video stream, and wherein the step of encoding the second video stream comprises the steps of:

receiving one or more decoded pictures from the first video stream;

performing disparity estimation using the decoded pictures from the first video stream;

encoding and decoding one or more pictures from the second video stream;

performing motion estimation using the decoded pictures from the second video stream; and

generating one or more B-pictures, based on disparity difference and motion difference, from the second video stream.

11. A 3D video displaying system comprising:

a demultiplexer for receiving a compressed 3D video stream, and for extracting a first compressed video stream and a second compressed video stream from the compressed 3D video stream;

a first decompressor for decoding the first compressed video stream to generate a first video stream;

a second decompressor for decoding the second compressed video stream using information related to the first compressed video stream to generate a second video stream.

12. The 3D video displaying system of claim 11 wherein the first decompressor includes an MPEG decoder, the first video stream includes one or more decoded first

pictures, and the second video stream includes one or more decoded second pictures, and

wherein the second decompressor receives the decoded first pictures from the first decompressor, uses the decoded first pictures for disparity compensation, and uses the decoded second pictures for motion compensation.

13. The 3D video displaying system of claim 11 wherein the first video stream includes one selected from a group consisting of a right view video stream and a left view video stream, and the second video stream includes either the right view or the left view video stream, whichever is not included in the first video stream.

14. The 3D video displaying system of claim 11 further comprising a first display device, wherein the first video stream is provided to the first display device for display.

15. The 3D video displaying system of claim 11 further comprising a video interleaver for receiving the first video stream and the second video stream, and for interleaving the first video stream and the second video stream to generate a 3D video stream.

16. The 3D video displaying system of claim 15 further comprising a display device and LCD shuttered glasses, wherein the 3D video stream is displayed on the display device, and even and odd fields of the 3D video stream are viewed alternately by right and left eyes, respectively, using LCD shuttered glasses.

17. The 3D video displaying system of claim 11 further comprising first and second display devices, wherein the first video stream is displayed on the first display device, and the second video stream is displayed on the second display device, and wherein the first display device is viewed by a first eye of a viewer and the second display device is viewed by a second eye of the viewer.

18. A method of processing a compressed 3D video stream, the method comprising the steps of:

receiving the compressed 3D video stream;

demultiplexing the compressed 3D video stream to extract a first compressed video stream and a second compressed video stream;

decoding the first compressed video stream to generate a first video stream; and

decoding the second compressed video stream using information related to the first compressed video stream to generate a second video stream.

19. The method of claim 18 wherein the first video stream includes one or more decoded first pictures and the second video stream includes one or more decoded second pictures, and

wherein the step of decoding the second compressed video stream comprises the steps of: receiving the decoded first pictures from the first video stream; performing disparity compensation using the decoded first pictures; and performing motion compensation using the decoded second pictures.

20. The method of claim 18 wherein the first video stream includes one selected from a group consisting of a right view video stream and a left view video stream, and the second video stream includes either the right view or the left view video stream, whichever is not included in the first video stream.

21. The method of claim 20 further comprising the step of displaying the first video stream on a display device.

22. The method of claim 18 further comprising the step of interleaving the first video stream and the second video stream to generate a 3D video stream.

23. The method of claim 22 further comprising the step of displaying the 3D video stream on a display device, and wherein even and odd fields of the 3D video stream are viewed alternately by right and left eyes, respectively, using LCD shuttered glasses.

24. The method of claim 18 wherein the first video stream is displayed on a first display device and the second video stream is displayed on a second display device, and wherein the first display device is viewed by a first eye of a viewer and the second display device is viewed by a second eye of the viewer.

25. A 3D video broadcasting system comprising:

a video compressor for receiving right and left view video streams, and for generating a compressed 3D video stream; and

a set-top receiver for receiving the compressed 3D video stream and for generating a 3D video stream,

wherein the compressed 3D video stream comprises a first compressed video stream and a second compressed video stream, and wherein the second compressed video stream has been encoded using information from the first compressed video stream.

26. The 3D video broadcasting system of claim 25 further comprising a 3D lens system for generating an optical output, the optical output including interleaved left and right view images.

27. The 3D video broadcasting system of claim 26 further comprising an HD digital video camera, wherein the HD digital video camera receives the optical output and generates a 3D digital video stream.

28. The 3D video broadcasting system of claim 27 further comprising a video stream formatter for filtering and re-sampling the 3D digital video stream to generate a stereoscopic pair of standard definition (SD) digital video streams to provide as the right and left view video streams.

29. The 3D video broadcasting system of claim 28 wherein the video stream formatter generates at least one selected from a group consisting of a 2D video stream and a 3D video stream to be used for monitoring quality during production of the 3D digital video stream.

30. The 3D video broadcasting system of claim 25 wherein at least one bi-directional picture (B-picture) in the second compressed video stream have been encoded using an intra picture (I-picture) from the first compressed video stream for disparity compensation coding and an I-picture from the second compressed video stream for motion compensation coding.

31. A 3D video broadcasting system comprising:

compressing means for receiving and encoding right and left view video streams to generate a compressed 3D video stream; and

decompressing means for receiving and decoding the compressed 3D video stream to generate a 3D video stream,

wherein the compressed 3D video stream comprises a first compressed video stream and a second compressed video stream, and wherein the second compressed video stream has been encoded using information from the first compressed video stream.

32. The 3D video broadcasting system of claim 31 further comprising means for generating an optical output including interleaved left and right view images.